

## Opener Question(regular deposit)

Solve using both Formula and TVM Solver

9. At the end of every 6 months, Marcia deposits \$100 in a savings account that pays 4%/a compounded semi-annually. She made the first deposit when her son was 6 months old, and she made the last deposit on her son's 21st birthday. The money remained in the account until her son turned 25, when Marcia gave it to him. How much did he receive?

$$A = R \frac{(1+i)^n - 1}{i}$$

Jan 6-7:56 AM

## Annuity Problems p509 -517

TI83 -TVM Solver Instructions on p568-573

## Work Period

p498-500 q. 6,8,9,11,14  
 p506-508 q. 4,5,6,9,12  
 p517-519 q. 4,5,6,7,8,9,10,13

May 20-8:42 AM

12. René buys a computer system for \$80 down and 18 monthly payments of \$55 each. The first payment is due next month.
- The interest rate is 15%/a compounded monthly. What is the selling price of the computer system?
  - What is the finance charge?

18. Kyla must repay her \$17,000 student loan. She can afford to make monthly payments of \$325. The bank's interest rate is 7.2%/a compounded monthly. Determine how long it will take Kyla to repay her loan.

62.96 months      63  
 5 yrs 3 months

$$62.96 \times 325 = 20462$$

2462 int

Jun 6-7:59 AM

Jun 6-7:59 AM

2. An \$18 000 car loan is charged 4%/a interest compounded quarterly.
- Determine the quarterly payments needed to pay the loan off in 5 years.
  - How much faster would the loan be paid off with the same payments if the interest rate was lowered to 2.9%/a?
  - What would be the total cost of the car, including interest, in parts (a) and (b)?

(4%)  $997.48 \times 20 = 19949$   
 (2.9%)  $997.43 \times 19.41 = 19361$

Jun 6-8:00 AM

4. Susan's parents would like to save \$12 000 over the next four years to pay for her first year at McGill University in Montréal.
- How much should they deposit at the end of each month into an account that pays 7.25%/a, compounded monthly, to attain their goal?
  - How much should they deposit at the end of every three months into an account that pays 7.25%/a, compounded quarterly, to attain their goal?

over three times the

Jun 6-8:01 AM

p 499 #6      \$500,000 - 2 yrs from now

450,000 - house

900 biweekly 10.5% / a

$n = 26 \times 2 = 52$   
 $i = 10.5\% / 26 = 0.00404$

$$A = \frac{R[(1+i)^n - 1]}{i}$$

$$= \frac{900[(1+0.00404)^{52} - 1]}{0.00404}$$

$$= \frac{900[(1.00404)^{52} - 1]}{0.00404}$$

$$= \frac{900[1.2307 - 1]}{0.00404}$$

$$= \frac{900[0.2307]}{0.00404}$$

$$= 51,908.05$$

May 20-9:48 AM

499 #9       $R = 100$   
 $i = 0.04/2 = 0.02$   
 $n = 21 \times 2 = 42$

$$A = \frac{R[(1+i)^n - 1]}{i}$$

$$= \frac{100[(1.02)^{42} - 1]}{0.02}$$

$$= \frac{100(2.29 - 1)}{0.02}$$

$$= \frac{100(1.29)}{0.02}$$

$$= \frac{129}{0.02} \quad 21st$$

$$= 6496.22$$

$A = P_0(1+i)^n$        $i = 0.04/2 = 0.02$   
 $n = 4 \times 2 = 8$   
 $P_0 = 6496.22$

$= \$7599.64$

May 20-10:03 AM

p 499 #11

May 25-9:50 AM

8. Claire buys a snowboard for \$150 down and pays \$35 at the end of each month for 1.5 years. If the finance charge is 16%/a compounded monthly, determine the selling price of the snowboard.

$$PV = \frac{R[1 - (1+i)^{-n}]}{i}$$

$R = 35$   
 $PV = ?$   
 $i = 0.16/12 = 0.0133$   
 $n = 1.5 \times 12 = 18$

$$PV = \frac{35[1 - (1.0133)^{-18}]}{0.0133}$$

$$= \frac{35[1 - 0.7833]}{0.0133}$$

$$= \frac{35(0.2167)}{0.0133}$$

$$= 557.11 + 150$$

The present value of the snowboard is 707.11

May 31-9:48 AM

7. May Sum has saved \$125,000 in an investment account. She will use it to buy an annuity that pays 6.5%/a compounded quarterly. She will receive quarterly payments for the next 25 years. The first payment will be made 3 months from now.

- a) What is the quarterly payment she will receive?  
 b) What is the interest earned over the duration of the annuity?

7. May Sum has saved \$125,000 in an investment account. She will use it to buy an annuity that pays 6.5%/a compounded quarterly. She will receive quarterly payments for the next 25 years. The first payment will be made 3 months from now.

- a) What is the quarterly payment she will receive?  
 b) What is the interest earned over the duration of the annuity?

$$125,000 = \frac{R[1 - (1+i)^{-n}]}{i}$$

$R = ?$   
 $i = 0.065/4 = 0.0163$   
 $n = 25 \times 4 = 100$

$$125,000 = \frac{R[1 - (1.0163)^{-100}]}{0.0163}$$

$$125,000 \times 0.0163 = \frac{R(1 - 0.185)}{0.0163}$$

$$2031.25 = \frac{R(0.815)}{0.0163}$$

$$R = 2534.31$$

Jun 7-7:30 AM

Jun 7-7:30 AM

7. Yanmei has contributed \$250 to an RRSP at the end of each 3-month period for the past 35 years. During this time, the RRSP has earned an average of 11.5%/a compounded quarterly.

- How much will the RRSP be worth at maturity?
- How much of the investment will be interest earned over the 35 years?

$$\begin{aligned}
 FV &= \frac{R(1+i)^n - 1}{i} \quad \begin{array}{l} FV = ? \\ i = 0.115/4 \\ n = 35 \times 4 = 140 \\ R = 250 \end{array} \\
 FV &= \frac{250(1+0.02875)^{140} - 1}{0.02875} \\
 &= \frac{250(53.2 - 1)}{0.02875} \\
 &= \frac{250(52.2)}{0.02875} \\
 &= 453,559.03 \\
 250 \times 140 &= 35,000
 \end{aligned}$$

Jun 7-7:31 AM